CLAIMS:

1. Apparatus for generating power from a water current in a body of water, said apparatus comprising:

(a) a longitudinally extending flotation platform for maintaining said apparatus afloat in a body of water, said platform comprising:

(i) a forward part having opposed diverging sides extending outwardly and rearwardly from a forward end apex to first and second elongated rearward parts, said first rearward part extending longitudinally rearwardly from said forward part, said second rearward part extending longitudinally rearwardly from said forward part substantially parallel to said first rearward part; and,

(ii) a longitudinal opening extending downwardly through said platform between said first and second rearward parts;

and,

(b) a water turbine operatively carried by said platform for generating power in response to a water current in said body of water, said turbine comprising:

(i) a turbine rotor longitudinally extending transversely across said opening between opposed ends of the rotor, said rotor rotatably mounted to said platform for rotation about a rotor axis; and,

(ii) a plurality of turbine blades extending outwardly from said rotor for operative communication with said water current through said downward opening.

2. Apparatus as defined in claim 1, wherein:

(a) said blades are relatively narrow, flexible elongated blades and are arranged in circumferentially spaced rows extending along said rotor;

(b) in each of said rows said blades are distanced from each other in succession by a space.

3. Apparatus as defined in claim 2, wherein said blades have lengths which vary substantially smoothly from relatively short lengths for those ones of said blades positioned towards said opposed ends of said rotor to relatively long lengths for those ones of said blades positioned towards the center between said opposed ends.

4. Apparatus as defined in claim 2, wherein said rows are staggered such that the blades in a given one of said rows circumferentially align with spaces between blades in a row immediately circumferentially forward of the given row and with the spaces between blades in a row immediately circumferentially rearward of the given row.

5. Apparatus as defined in claim 4, wherein said blades have lengths which vary substantially smoothly from relatively short lengths for those ones of said blades positioned towards said opposed ends of said rotor to relatively long lengths for those ones of said blades positioned towards the center between said opposed ends.

6. Apparatus as defined in claim 5, wherein said lengths of said blades vary substantially parabolically between said opposed ends.

7. Apparatus as defined in claim 1, wherein said turbine is carried by said platform at an adjustable elevation in relation to said platform.

8. Apparatus as defined in claim 1, further including means for adjusting the elevation of said turbine relative to said platform.

9. Apparatus as defined in claim 1, further including a winch mounted on said platform and a mooring cable reelably wound on said winch, said cable attachable to an anchorage whereby downstream movement of said platform is restrained.

10. Apparatus as defined in claim 1, further including a deflector mounted to said platform at said forward end for deflecting debris floating in said body of water.

11. Apparatus as defined in any one of claims 1 to 10, wherein said opening is laterally bounded by opposed downwardly and longitudinally extending inner side walls for channelling water current communicating with said blades.

12. Apparatus for generating power from a water current in a body of water, said apparatus comprising:

(a) a longitudinally extending flotation platform for maintaining said apparatus afloat in a body of water, said platform comprising:

(i) a forward part having opposed diverging sides extending outwardly and rearwardly from a forward end apex to first and second elongated rearward parts, said first rearward part extending longitudinally rearwardly from said forward part; said second rearward part extending longitudinally rearwardly from said forward part substantially parallel to said first rearward part;

(ii) a third elongated rearward part positioned between said first and second rearward parts and extending longitudinally rearwardly from said forward part substantially parallel to said first and second rearward parts;

(iii) a first longitudinal opening extending downwardly through said platform between said first and third rearward parts; and,

(iv) a second longitudinal opening extending downwardly through said platform between said second and third rearward parts;

and,

(b) first and second water turbines operatively carried by said platform for generating power in response to a water current in said body of water, each of said turbines comprising an associated turbine rotor rotatably mounted to said platform for rotation about an associated rotor axis and a plurality of associated turbine blades, wherein:

(i) said rotor of said first water turbine extends transversely across said first opening, and said blades of said first water turbine extend outwardly from

said rotor of said first water turbine for operative communication with said water current through said first opening; and,

(ii) said rotor of said second water turbine extends transversely across said second opening, and said blades of said second water turbine extend outwardly from said rotor of said second water turbine for operative communication with said water current through said second opening.

13. Apparatus as defined in claim 12, wherein:

(a) said first downward opening is laterally bounded by opposed downwardly and longitudinally extending inner side walls for channelling water current communicating with said blades of said first water turbine; and,

(b) said second downward opening is laterally bounded by opposed downwardly and longitudinally extending inner side walls for channelling water current communicating with said blades of said second water turbine.

14. Apparatus as defined in claim 12, wherein:

(a) said blades are relatively narrow, flexible elongated blades and are arranged in circumferentially spaced rows extending along the associated rotor;

(b) in each of said rows said blades are distanced from each other in succession by a space.

15. Apparatus as defined in claim 14, wherein:

(a) said first downward opening is laterally bounded by opposed downwardly and longitudinally extending inner side walls for channelling water current communicating with said blades of said first water turbine; and,

(b) said second downward opening is laterally bounded by opposed downwardly and longitudinally extending inner side walls for channelling water current communicating with said blades of said second water turbine.

16. A water turbine, comprising:

(a) a turbine rotor longitudinally extending between opposed ends of the rotor; and,

(b) a plurality of relatively narrow, flexible elongated turbine blades extending outwardly from said rotor for communication with a water current, wherein:

(i) said blades are arranged in circumferentially spaced rows extending along said rotor;

(ii) in each of said rows said blades are distanced from each other in succession by a space; and,

(iii) said rows are staggered such that the blades in a given one of said rows circumferentially align with spaces between blades in a row immediately circumferentially forward of the given row and with the spaces between blades in a row immediately circumferentially rearward of the given row.

17. A water turbine as defined in claim 16, wherein the lengths of said blades vary substantially smoothly from a minimum length for those ones of said blades positioned towards said opposed ends of said rotor to a maximum length for at least one of said blades positioned intermediate said opposed ends.

18. A water turbine as defined in claim 17, wherein said blades have lengths which vary substantially parabolically between said opposed ends.

19. A method of generating power from a water current in a body of water, said method comprising:

(a) providing a first power generation station, said station comprising

(i) a longitudinally extending flotation platform for maintaining said station afloat in a body of water, said platform comprising:

(A) a forward part having opposed diverging sides each extending outwardly and rearwardly from a forward end apex to first and second elongated rearward parts, said first rearward part extending

longitudinally rearwardly from said forward part to a first distal end; said second rearward part extending longitudinally rearwardly from said forward part substantially parallel to said first rearward part to a second distal end; and,

(B) a longitudinal opening extending downwardly through said platform between said first and second rearward parts;

and,

(ii) a water turbine operatively carried by said platform for generating power in response to a water current in said body of water, said turbine comprising:

(A) a turbine rotor longitudinally extending transversely across said opening between opposed ends of said rotor, said rotor rotatably mounted to said platform for rotation about a rotor axis; and,

(B) a plurality of turbine blades extending outwardly from said rotor for operative communication with said water current through said downward opening;

(b) floating said station in said body of water with said forward end apex directed upstream in said water current; and,

(c) controllably restraining downstream movement of said platform.

20. A method as described in claim 19, further including:

(a) providing second and third power generation stations, each comprising a flotation platform substantially the same as the flotation platform of said first power generation station;

(b) floating said second station in said body of water with the forward end apex of said second platform positioned proximate to said first distal end of said first platform; and,

(c) floating said third station in said body of water with the forward end apex of said third platform positioned proximate to said second distal end of said first platform.

21. A method as described in claim 20, wherein said second and third power generation stations each comprise a water turbine substantially the same as the water turbine of said first power generation station.

22. A method as defined in claim 19, wherein:

(a) said blades are relatively narrow, flexible elongated blades and are arranged in circumferentially spaced rows extending along said rotor;

(b) in each of said rows said blades are distanced from each other in succession by a space.

23. A method as defined in claim 22, wherein said blades have lengths which vary substantially smoothly from relatively short lengths for those ones of said blades positioned towards said opposed ends of said rotor to relatively long lengths for those ones of said blades positioned towards the center between said opposed ends.

24. A method as defined in claim 22, wherein said rows are staggered such that the blades in a given one of said rows circumferentially align with spaces between blades in a row immediately circumferentially forward of the given row and with the spaces between blades in a row immediately circumferentially rearward of the given row.

25. A method as defined in claim 24, wherein said blades have lengths which vary substantially smoothly from relatively short lengths for those ones of said blades positioned towards said opposed ends of said rotor to relatively long lengths for those ones of said blades positioned towards the center between said opposed ends.

26. A method as defined in claim 25, wherein the lengths of said blades vary substantially parabolically between said opposed ends.

27. A method as defined in any one of claims 19 to 26, wherein said opening is laterally bounded by opposed downwardly and longitudinally extending inner side walls for channelling water current communicating with said blades.

28. A method as defined in claim 19, wherein said first and second distal ends each have an angle of taper which conforms with the angle at which said diverging sides of the forward part of said platform extend rearwardly from said forward end apex of said platform.